

FOJR 17.365 (100794-11451)
09/897,935REMARKS

This amendment is in response to the Examiner's Office Action dated 7/8/2004.

Reconsideration of this application is respectfully requested in view of the foregoing amendment and the remarks that follow.

STATUS OF CLAIMS

Claims 1-37 are pending.

Claims 27 and 35 are withdrawn from consideration.

Claims 1, 4, 7, 10, 13, 16, 19, 22, 25-26, 28-30, 33-34, and 36-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shi (USP 6,507,740) in view of Frank et al. (Re. 37,757).

Claims 2-3, 5-6, 8-9, 11-12, 17-18, 20-21, 23-24, and 31-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shi (USP 6,507,740) in view of Frank et al. (Re. 37,757) and further in view of Balachandran (USP 5,594,943).

OVERVIEW OF CLAIMED INVENTION

The presently claimed invention provides for a system and method limiting unnecessarily frequent handoffs in a mobile communication system, thus enhancing the probability of successful maintenance of a stable call condition. The handoff method of the present invention is achieved by varying a handoff threshold, which is set in a mobile station, according to the quality of a wireless link between the mobile station and a currently controlling base station and by subsequently performing a handoff based on the variable threshold. A handoff threshold varying unit varies a handoff threshold in accordance with a wireless link quality table of values that is prepared in advance and previously set in a mobile station. Handoff threshold is varied

Page 15 of 20

PUJR 17.355 (100794-11451)
09/597,935

according to the real-time quality of a wireless link between the mobile station and a currently controlling wireless base station.

Also provided is a handoff processing unit which executes processing for handing off the mobile station and limiting unit which *stops the processing for the hand off of a mobile station to another wireless base station when the frequency of identical handoffs exceeds a predetermined limit*. Additionally, the handoff limiting unit is enabled to raise the handoff threshold when processing for handing off the mobile station is stopped. Rather than simply allowing the handoff varying unit to change the handoff threshold based on wireless link quality, the handoff processing unit can also change the handoff threshold such that output control information sent to another, receiving base station is accurately received. In other words, as a means of limiting handoff frequency, when the handoff limiting unit chooses to cancel a handoff, the handoff threshold can also be raised, such that the probability that the reference signal received from another wireless base station exceeds the handoff threshold which is set in the mobile station when the handoff is cancelled.

Further, it is possible to limit the number of identical handoffs occurring within a predetermined time, even when the mobile station moves in a region in which at least one complex boundary of areas covered by different wireless base stations exists. Both the handoff processing unit and handoff threshold varying unit may be included in each mobile station, or in a mobile switching center provided in the mobile communication system.

FUJR 17.355 (100794-11451)
09/597,935In the ClaimsREJECTIONS UNDER 35 U.S.C. §103(a)

With regards to independent claims 1, 4, 7, 10, 13, 16, 19, 22, and 30, the Examiner has again referenced Shi as providing for a handoff varying unit varying a handoff threshold set in one of said at least one mobile station (MS). The passage cited by the examiner in col. 4, lines 56 and 57 of the Shi reference simply recites a dynamic threshold, and makes no mention of how the threshold is changed. A closer reading of subsequent sections cited by the examiner in fig. 6 and accompanying discussion in col. 5 line 30 – col. 7, line 11 indicates that Shi provides for a method that dynamically calculates an RSSI band number (RBN), which is subsequently compared to a link quality indicator (LQI) and further manipulated as shown at box 136 and box 142 of figure 6 in the Shi reference, all of which are necessary steps in computing a new handoff threshold. Using the nomenclature of Shi, in order to “adapt” or “adjust” a handoff threshold, a necessary component of the Shi method is calculating an RBN number in order to compute an “adaptation” or “adjustment” to a handoff threshold, as disclosed in col. 5, lines 61-65 of Shi. By contrast, the method of present invention does not require calculation, computation, or processing to obtain a new handoff threshold; rather, the handoff threshold unit *simply varies a current handoff threshold based on a table of values (handoff threshold vs. link quality indicator) that is previously set in the MS*. In other words, based on the quality of the wireless link obtained from an MS scan, a handoff varying unit changes a current handoff threshold to a new handoff threshold by looking up a preset handoff threshold that corresponds to the real-time wireless link quality. On the other hand, the Shi reference requires processing resulting in several computation cycles to calculate a handoff threshold, *whereas the method of the present invention teaches a constant-time table look-up to change a current handoff threshold*.

FUJR 17.355 (100794-11451)
09/597,935

Furthermore, as admitted by the examiner, Shi does not teach or suggest a method for stopping the handoff process of the MS to another wireless BS when a frequency of handoffs exceeds a predetermined frequency. With respect to claims 1, 4, 7, 10, 13, 16, 19, 22, and 30, applicants agree with the examiner that the Shi reference does not disclose a method of stopping the handoff process of a mobile station (MS) to another base station (BS) when a frequency of handoff has exceeded a predetermined frequency. Applicants, however, disagree with the examiner that such a limitation is provided in the Frank reference.

The examiner cites column 8, lines 4-15 of the Frank reference as providing the above-mentioned limitation with respect to claims 1, 4, 7, 10, 13, 16, 19, 22, and 30. A closer reading of the citation, however, merely reveals a method wherein "hand-off decisions are delayed" in order to minimize the number of hand-offs. Applicants contend that there is no teaching either in the citation or in the Frank reference in its entirety for keeping track of a "frequency of handoffs". Applicants further contend that the Frank reference fails to provide for a predetermined frequency of handoffs. Applicants also contend that there is no teaching either in the citation or in the Frank reference in its entirety for stopping processing of handing off a MS to another wireless BS when the frequency of handoffs exceeds the predetermined frequency.

The examiner is respectfully requested to refer to column 11, lines 23-39 of the Frank reference where it states that in task 118, a check is performed to see if a predetermined period of time has passed since either the subscriber unit was assigned a traffic channel or the subscriber unit has requested a handoff. This clearly states that the Frank reference merely checks if a predetermined time has passed since a subscriber unit has requested handoff, but fails to suggest checking a frequency of handoffs against a predetermined frequency of handoffs. The Frank reference also fails to teach stopping the processing of handoffs when such a predetermined frequency is exceeded. Furthermore, the method Frank et al. neither teaches nor suggests a delay

Page 18 of 20

FUJR 17.355 (100794-11461)
09/597.935

or a stoppage of calculating, computing, or obtaining a new, dynamic handoff threshold when a predetermined limit of handoffs has been reached. Thus, both of the methods disclosed in the Shi and Frank et al. references, when viewed independently or in combination, teach delays in handoff decisions to free up system resources but do not teach delays in computation and processing of new, dynamic handoff thresholds. Thus, processing power is still being overused when in the vicinity of a complex boundary.

With regards to remaining dependant claims 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, 20, 21, 23-26, 28, 29, 31-34, 36, and 37, the above-mentioned arguments apply substantially in that at least the elements inherited from independent claims, upon which they depend.

SUMMARY

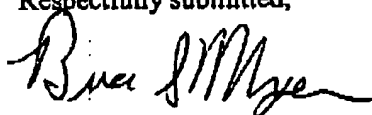
As has been detailed above, none of the references, cited or applied, provide for the specific claimed details of applicants' presently claimed invention, nor renders them obvious. It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested.

As this amendment has been timely filed within the set period of response, no petition for extension of time or associated fee is required. However, the Commissioner is hereby authorized to charge any deficiencies in the fees provided to Deposit Account No. 50-1290.

FUJR 17.355 (100794-11451)
09/597,935

If it is felt that an interview would expedite prosecution of this application, please do not
hesitate to contact applicants' representative at the below number.

Respectfully submitted,



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Page 20 of 20

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